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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,708	02/11/2004	Eric J. Alexander	WIE-019	3430

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EXAMINER
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ENSEY, BRIAN

ART UNIT	PAPER NUMBER
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2646

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/776,708	<b>Applicant(s)</b> ALEXANDER ET AL.	
	<b>Examiner</b> Brian Ensey	<b>Art Unit</b> 2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 2/11/04.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/2/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 3, 4, 21 and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The aforementioned claims broaden the frequency band of the independent claim. Claims 3 and 21 extend the frequency band to between 2kHz and 11 kHz and claims 4 and 22 extend the frequency band to between 800 Hz and 11 kHz.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5, 7, 8, 12, 19-21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Kayman U.S. Patent No. 4,310,065.

Regarding claim 1, Kayman discloses an audio speaker system comprising: a speaker driver (20) for reproducing sound within an extended frequency range that includes a high frequency band between 8 kHz and 11 kHz ((See col. 5, lines 22-24; 2 to 20 kHz); and a horn (12) disposed adjacent said speaker driver that has an axi-symmetrical waveguide surface with an annular cross-section (See Fig. 1 and col. 2, lines 61-66), said waveguide surface dispersing

Art Unit: 2646

sound within the extended frequency range at a dispersion angle greater than 90 degree ( See Abstract lines 1-3: 360 degrees).

Regarding claim 2, Kayman further discloses said waveguide surface provides uniform polar dispersion at dispersion angles greater than 90 degrees for sound within the extended frequency range (See Fig. 1, col. 1, lines 52-55 and col.5, lines 22-24).

Regarding claim 3, Kayman further discloses the extended frequency range includes a wide frequency band between 2 kHz and 11 kHz (See col. 5, lines 22-24).

Regarding claim 5, Kayman further discloses said waveguide surface has a throat (41) disposed substantially adjacent said speaker driver (20), a mouth (48) disposed opposite said throat, and a radial dimension that increases curvilinearly from said throat to said mouth (See Fig. 1 and col. 4, lines 11-55).

Regarding claim 7, Kayman further discloses a portion of said waveguide surface has length that is exponentially related to the area of its mouth (See col. 4, lines 38-55).

Regarding claim 8, Kayman further a portion of said waveguide surface is curvilinear with a smooth flare rate (See col. 4, lines 38-55).

Regarding claim 12, Kayman further discloses said speaker driver includes a radiating dome-shaped surface (See col. 5, lines 24-27).

Regarding claim 19, Kayman discloses an audio speaker system comprising: a speaker driver (20) for reproducing sound within an extended frequency range that includes a high frequency band between 8 kHz and 11 kHz ((See col. 5, lines 22-24; 2 to 20 kHz); and a horn (12) disposed adjacent said speaker driver that has an axi-symmetrical waveguide surface which is curvilinear with a smooth flare rate (See Fig. 1, col. 2, lines 61-66 and col. 4, lines 43-51),

Art Unit: 2646

said waveguide surface dispersing sound within the extended frequency range at a dispersion angle greater than 90 degree ( See Abstract lines 1-3: 360 degrees).

Regarding claim 20, Kayman further discloses said waveguide surface provides uniform polar dispersion at dispersion angles greater than 90 degrees for sound within the extended frequency range (See Fig. 1, col. 1, lines 52-55 and col.5, lines 22-24).

Regarding claim 21, Kayman further discloses the extended frequency range includes a wide frequency band between 2 kHz and 11 kHz (See col. 5, lines 22-24).

Regarding claim 23, Kayman further discloses said speaker driver includes a radiating dome-shaped surface (See col. 5, lines 24-27).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2646

3. Claims 4, 9-11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman.

Regarding claims 4 and 22, Kayman discloses a speaker system as claimed. Kaman does not expressly disclose the extended frequency range includes a wide frequency band between 800 Hz and 11 kHz. However, Kayman teaches an extended frequency range of approximately 2 to 20 kHz (See col. 5, lines 22-24). Kayman further teaches modifications may be made to the dimensions and scaling of the entire structure to adapt to a variety of frequency ranges (See col. 5, line 55 to col. 6, line 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to vary the frequency range to as low as 20 Hz to meet the full range of human hearing.

Regarding claims 9-11, Kayman does not expressly disclose the length of said waveguide surface is approximately 1.125 inches, the area of said throat is approximately 0.192 square inches or the area of said mouth is approximately 1.777 square inches. However, Kayman teaches a speaker of small dimensions comprising a waveguide length of 2.75 inches (See col. 5, lines 22-42). Kayman does not limit the size of the speaker unit and teaches that the unit may be scaled up or down and some dimensions may be changed while others remain constant (See col. 5, line 55 to col. 6, line 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the dimensions of the speaker of Kayman to meet a variety of frequency ranges (See col. 5, lines 55-60).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman in view of Perkins PCT WO 99/04599.

Regarding claim 6, Kayman does not expressly disclose a portion of said waveguide surface defines a tractroid surface. However, Kayman teaches the horn may be made of multiple, variable sections such as exponential, hyperbolic, circular or the like. It is well known in the art to combine multiple flare contours including a tractrix contour and Perkins teaches a horn comprising three different flare rates including a tractrix flare rate (See Perkins abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize multiple flare rates on the speaker horn to control the beaming of the sound output.

5. Claims 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman in view of Tsai U.S. Patent No. 6,862,360.

Regarding claims 13 and 24, Kayman discloses a speaker system as claimed. Kayman does not expressly disclose said speaker driver is rear-vented into a rear chamber that dissipates low frequency sound components. However, the use of chambers to dissipate low frequency sound components of rear wave generated sound from a speaker is well known in the art and Tsai discloses a chamber (1) in which a rear vented speaker driver (3) is mounted to dissipate low frequency sound components (See Fig. 2 and col. 2, lines 43-64). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a sound dissipating chamber in the speaker system of Kayman so that high fidelity sound frequencies can be reproduced (See Tsai abstract).

6. Claims 14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman in view of Maekawa et al. U.S. Patent No. 3,867,586.

Regarding claims 14 and 25, Kayman discloses a speaker system with a gasket as claimed. Kayman does not expressly disclose an annular gasket disposed in annular grooves outside a throat area of said horn. However, Maekawa teaches an annular gasket (6) disposed in annular grooves outside a throat area of said horn (See Fig. 3 and col. 2, lines 55-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the annular gasket of Maekawa in the driver of Kayman to obtain a flatter frequency response characteristic (See Maekawa col. 3, lines 14-31).

7. Claims 15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kayman in view of Maekawa as applied to claims 14 and 25 above, and further in view of Dodd U.S. Patent No. 6,116,373.

Regarding claims 15 and 26, the combination of Kayman in view of Maekawa discloses a speaker system with a gasket as claimed. The combination of Kayman in view of Maekawa does not expressly teach the content of his annular gasket is formed from a foam material. However, the use of closed cell foam gaskets for sound absorption is well known in the art and Dodd teaches a foam gasket for use on the connecting flange of a horn loudspeaker for sound absorption (See col. 1, lines 43-46 and lines 58-63). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the closed cell foam gasket of Dodd for the gasket of the combination of Kayman in view of Maekawa for vibration damping and sound absorption and to obtain a flatter frequency response characteristic (See Maekawa col. 3, lines 14-31).

8. Claims 16 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman in view of Larsen et al. U.S. Patent No. 5,701,358.



Regarding claims 16 and 27, Kayman does not expressly disclose said speaker driver comprises a ring-shaped neodymium magnet. However, the use of a ring-shaped neodymium magnet in a speaker magnetic drive circuit is well known in the art and Larsen teaches a speaker magnetic drive circuit utilizing a ring-shaped neodymium magnet(162) (See Fig. 8 and col. 9, lines 35-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a ring-shaped neodymium magnet in the drive circuit of Kayman to enhance the magnetic flux in the vicinity of the voice coil (See Larsen col. 9, lines 35-38).

9. Claims 17 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kayman in view of Maekawa as applied to claims 1 and 19 above, and further in view of Espiritu U.S. Patent No. 6,002,780.

Regarding claims 17 and 28, the combination of Kayman in view of Maekawa discloses a speaker system with a gasket as claimed. The combination of Kayman in view of Maekawa does not expressly teach said speaker driver and horn are disposed coaxially with a low frequency speaker to thereby realize an integrated multi-element system. However, the use of coaxially aligned speakers for improved sound fidelity over a wide frequency range is well known in the art and Espiritu teaches a high frequency speaker mounted coaxially with a low frequency speaker (See Fig. 1 and col. 1, lines 51-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to mount the audio speaker of the combination of Kayman in view of Maekawa coaxially in the center of the low frequency speaker of Espiritu for an improved frequency response and reduced space.

10. Claims 18 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayman in view of Thiele U.S. Patent Application Publication 2003/0002694.

Art Unit: 2646

Regarding claims 18 and 29, the combination of Kayman in view of Maekawa discloses a speaker system with as claimed. The combination of Kayman in view of Maekawa does not expressly teach cross-over circuitry, operably coupled to said speaker driver, that provides high pass filtering with a cutoff frequency corresponding to the extended frequency range of said speaker driver. However, the use of cross-over circuitry for filtering in a speaker system is well known in the art and Theile teaches a cross-over filter for providing a high pass filter function in a speaker system (See paragraph 0016). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a cross-over filter to operate the speaker system of Kayman in the desired operating frequency range.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Ensey whose telephone number is 571-272-7496. The examiner can normally be reached on Monday - Friday 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
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Alexandria, Va. 22313-1450

**Or faxed to:**

(571) 273-8300, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".  
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Art Unit: 2646

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BKE  
February 8, 2006



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